

**SELF-BIAS AND DIGITALLY TUNABLE CONDUCTION ANGLE CIRCUITS FOR  
A DIFFERENTIAL RF NON-LINEAR POWER AMPLIFIER EMPLOYING LOW-  
VOLTAGE TRANSISTORS**

**ABSTRACT OF THE DISCLOSURE**

A differential RF non-linear power amplifier employing low-voltage transistors in a cascode configuration uses self-biasing solutions rather than external biasing techniques to overcome transistor breakdown problems. The self-biasing solution ensures that the cascode devices and driver device operate below breakdown voltage limitations. A low resistance circuit is placed in parallel with the self-biased circuitry to mitigate increased on-resistance created by the self-biasing solution. PMOS and NMOS inverter legs provide digital programming of the conduction angle for the power amplifier. Changing the PMOS and NMOS strengths in the chain of inverter legs changes the conduction angle.